

## Clinical gains for youth in psychiatric residential treatment facilities: results from a state-wide performance information system

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**Clinical Gains for Youth in Psychiatric Residential Treatment Facilities:  
Results from a state-wide performance information system**

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**Clinical Gains for Youth in Psychiatric Residential Treatment Facilities:  
Results from a state-wide performance information system**

**Abstract:**

This paper presents findings on clinical gains for youth in psychiatric residential treatment facilities (PRTF) through the use of state-wide performance management information. Data was collected on 1,258 youth admitted to one of seventeen PRTF facilities in a single, mid-western state. Results suggest that youth made positive clinical changes during treatment. Further, results indicate that parent and youth hopefulness and satisfaction were significant predictors of positive clinical changes in problem severity and youth functioning. These findings contribute to current literature on PRTF effectiveness in achieving positive youth outcomes and the role of consumer attitudinal factors in treatment.

**Key Words:**

Residential treatment; adolescents; treatment outcomes; mental health; performance information

Residential treatment services for children and young people experiencing mental health issues remains controversial. Fundamental to this debate is whether residential treatment can and should be replaced with community-based mental health services or whether it functions as an important and necessary continuum of care component. Recent modernization of residential treatment services from the earlier institutionalization model to one that operates within the wider network of mental health services suggests the latter to be the case. Within this modernization are service delivery approaches focused on services that are short-term and intensive, family-centered, integrated with a wider system of care, and include an after-care component (Chance, Dickson, Bennett, & Stone, 2010; Lieberman, 2004).

With a decrease in hospital-based placements and an increasing preference for services in least-restrictive environments, residential treatment centers provide a service option for a specific group of children and young people and are often considered the option of last resort (Lieberman, 2004). In an effort to establish a greater fit between needs and services, research is increasingly focusing on the characteristics of children and youth who achieve the greatest benefits from residential treatment services (Knorth, Harder, Zandberg & Kendrick, 2008; Preyde, et al., 2011). There is some indication that residential treatment provides a viable alternative for youth with more severe behavioral difficulties who are unable or unwilling to access community-based provision (Preyde, et al., 2011).

Despite improved clarity as to the role of residential treatment services and an increasing understanding of the characteristics of children and youth most likely to benefit from service provision, the overall effectiveness of residential treatment continues to require further research. A wide variation in residential care sub-types (Butler & McPherson, 2007) and the diverse needs of children and youth accessing services present challenges in establishing overall effectiveness.

Further, the lack of a standard residential treatment center approach leads to variability in service delivery with some evidence of poor quality services and associated outcomes (Brown, Barrett, Ireys, Allen & Blau, 2011; Helgersen, Martinovich, Durkin, & Lyons, 2007; Lyons, Terry, Martinovich, Peterson, & Bouska, 2001; McMillen, Fedoravicius, Rowe, Zima, & Ware, 2007; Pavkov, Negash, Lourie, & Hug, 2010).

Progress is being made in developing performance management and outcome-based monitoring models (Kapp, Hahn, & Rand, 2011; Wall, et al., 2005) and residential treatment centers are increasingly adopting outcome monitoring methods (Brown, et al., 2010). However, development and implementation barriers persist on a political, ethical, administrative, and clinical level involving issues such as organizational culture, practice, and funding (Boyd, Einbinder, Rauktis, & Portwood, 2007; Butler, Little, & Grimard, 2009).

## **LITERATURE REVIEW**

Although complexities exist in the evaluation of outcomes, a relatively small but growing body of knowledge is becoming available to give some indication as to treatment benefits and service effectiveness. In addition to achievement of treatment goals, program completion, and discharge to a less restrictive environment other measures such as behavior and symptom improvement are useful in establishing how children and youth progress in residential treatment services.

A research review of studies exploring child and youth outcomes at discharge and post-discharge concludes that residential treatment serves as a valuable component to a wider system of care for youth with severe emotional and behavioral difficulties (Hair, 2005). The review highlights the positive influence of factors such as family involvement, community-based support, and the provision of after-care services in the achievement of successful outcomes.

A study examining outcome trajectories of children aged 4-17 across 62 residential treatment centers in Illinois identifies that, overall, child and youth functioning improved (Helgersen, et al., 2007). However, significant variation across residential treatment centers existed with some treatment centers demonstrating marked improvement in the functioning of youth with serious behavioral difficulties while others evidenced deterioration in youth with less problematic functioning at admission (Helgersen, et al., 2007). A study by Lyons, et al. (2001) noted similar variation across service providers which impacted treatment outcomes.

A study by Preyde, et al. (2011) measuring psychosocial functioning and symptom severity at 18-24 months and 36-40 months post-discharge identified both progress during treatment and a continuation of these gains at three years post-discharge for many children and youth who received residential treatment services.

While studies have identified positive gains in treatment resulting in improved functioning and a reduction in problem severity, findings are less consistent in establishing those presenting difficulties and symptoms most responsive to residential treatment services. The meta-analysis conducted by Knorth, et al. (2008) on twenty-seven pre-experimental and quasi-experimental design studies finds that children and youth achieve the largest degree of improvement in both general and externalizing problem behavior. These short-term outcomes, typically measured between 3-4 months post-discharge, were both statistically and clinically significant although a smaller effect size was found in the quasi-experimental design studies. The study concludes that psychosocial functioning tends to improve as a result of residential treatment services and the authors highlight components that achieve more positive results including behavior modification, family-centered treatment, and social-emotional/cognitive skills training. Knorth, et al. maintain that future research needs to not only address *if* residential treatment services are effective but to

begin to explore *how* they are effective, highlighting the limitations of existing research as a result of broad definitions of residential treatment and a lack of attention to specific treatment approaches.

Shabat, Lyons, and Martinovich's (2008) study involving 457 children and youth aged 6-20 comparing treatment outcomes of those diagnosed with conduct disorder and those with other diagnoses (non-conduct disorder) found that those with conduct disorder made greater treatment gains and had more significant improvement than the non-conduct disorder group. However, age was a moderating factor with the younger children (age 6-11) with conduct disorder responding more poorly to treatment than their non-conduct disorder peers. Progress was measured by clinicians using the Childhood Functional Assessment Rating Scale (CFARS) at 30-days followed by every six months until discharge. Initial results within the first seven months were comparable between the two groups with youth with conduct disorders making more significant gains over the course of treatment particularly in areas of depression, cognitive performance, and interpersonal relationships. Notably, school attendance deteriorated for both groups during the course of treatment.

These findings differ from those by Lyons, et al. (2001) involving the rate of change of 285 youth (aged 12-17) during residential treatment. Findings indicate that while overall improvement was achieved, residential treatment was more effective at reducing some behaviors and symptoms than others. While suicidality, self-mutilation, and aggression towards others improved, anxiety and hyperactivity became more severe. There was some variation across categories of diagnosis indicating that residential treatment may be more effective for youth diagnosed with PTSD and emotional disorders (e.g. adjustment and depressive disorders) than for youth diagnosed with ADHD and behavioral disorders (e.g. conduct and oppositional-defiant disorder). However, the



authors do indicate that diagnosis may not be an ideal form of categorization as some youth will present with multiple diagnoses.

Some research explores the influence of factors such as residential care placement suitability and stability on treatment outcomes for children and youth. Sunseri's (2005) study of 8,933 planned discharges found that children and youth in more intensive, high-level treatment services experienced higher rates of planned discharge than the lower-levels of residential treatment care. Additionally, residents with residential placement instability experienced deterioration in behavior from admission to discharge. These findings suggest that ensuring a suitable match between the child's needs and the appropriate level of residential treatment at admission is important in achieving positive treatment outcomes.

These findings are supported by Lyons, Woltman, Martinovich, and Hancock (2009). Their study involving residential care outcome data over a five-year period (2002-2007) found a "tightening" of the use of residential treatment care with the use of services decreasing but becoming more focused on children and youth with severe problems. There was also a greater distinction in youth problem severity and functioning scores across the different levels of residential treatment sub-types. Results indicate that improvement and outcome scores of children and youth have become greater as intensive services narrow their focus to those experiencing the most serious and problematic behavior and symptoms. The authors suggest that these findings may result from youth with less severe behavior difficulties having responded more poorly in residential environments that were comprised of peers with much higher levels of need.

The study by Lyons, et al. (2009) also highlights the importance of after-care services in achieving positive outcomes. Results indicate that children and youth with high levels of need may be suitable for discharge as early as six-months but only in the presence of intensive

community-based, after-care services. Studies highlight the importance of access to appropriate after-care services with this population as a result of levels of need. While children and youth show marked improvement during treatment, many continue to score at clinical levels at discharge reflecting the high level of need at admission (Shoelte & van der Ploeg, 2006).

In addition to greater attention to after-care services, effectiveness of residential treatment services could also be improved through greater focus on educational outcomes. Studies have indicated that educational outcomes are not being sufficiently addressed within the residential treatment setting (Shabat, et al., 2008), which is important as educational achievement prior to admission predicted post-discharge educational achievement (den Dunnen, et al., 2012). Further, a recent Canadian study indicates poorer educational outcomes with a large proportion of youth not attending school between 1-2 years post-discharge (Preyde, Adams, Cameron, & Frensch, 2009). These findings suggests that residential treatment services could do better in serving as an influence for some youth to continue to prioritize education and, for others, to re-prioritize as treatment gains are achieved.

Further to findings that suggest that children and youth in residential treatment experience poorer educational outcomes in the long term, studies suggest additional, ongoing challenges such as higher rates of homelessness within five years of discharge (Embry, Vander Stoep, Evens, Ryan & Pollock, 2000) and delinquency and criminality at 12-18 months post-discharge (Cameron, Frensch, Preyde, & Quosai, 2011). As a result of the complex and multiple psycho-social challenges experienced by this group of youth, the extent to which these outcomes can be associated with treatment limitations remains uncertain. However, it does highlight the ongoing difficulties faced by this population and the importance of a continuous system of care approach rather than an episodic intervention response.

Finally, place of discharge and subsequent placement stability serves as typical measures for post-treatment outcomes and provides mixed results. Studies highlight a high proportion of children and youth discharged from residential treatment services to less restrictive environments (Huefner, James, Ringle, Thompson, & Daly, 2010) such as home or home-like settings (Sunseri, 2005). However, the stability of these subsequent placements is less certain. While a study by Thomson, Hirshberg, and Qiao (2011) involving adolescent girls found placements sustained at one-year post-discharge other studies have found subsequent placement instability with a 20% breakdown rate of home placements (Farmer, Southerland, Mustillo, & Burns, 2009). Again, further research providing a more in-depth understanding of the circumstances of these youth and psycho-social factors that contribute to the stability of discharge placements is needed. The study by Farmer, et al. (2009) identifies that youth with more severe problems at discharge were more likely to be returned home suggesting unplanned discharges and making an eventual home-placement breakdown a likely (and potentially avoidable) outcome. Further, the study found that families with higher incomes were more likely to be discharged to out-of-home placements and to achieve a more planned and successful family reunification. The authors suggest that this group may be able to more effectively advocate for appropriate services and achieve successful transition.

The extant research highlights the body of knowledge that continues to develop on the effectiveness of residential treatment for assessing the impact of the service as well as highlighting specific service questions that may require additional investigation. This study illustrates the use of a specific agency-based reporting system (Kapp, Hahn, & Rand, 2011) for identifying specific clinical gains of the residents in multiple facilities in a single state.

## **METHOD**

### **Participants**

Subjects were 1,258 Kansas children and youth (778 boys, 480 girls) admitted to one of seventeen psychiatric residential treatment facilities in Kansas or Missouri (two facilities in Missouri accept Kansas children and youth). Children and youth ranged from age 6 to 21 years (mean = 14.18, SD = 2.68) at admission. Ethnicity was as follows: 73.5% White, 13% Black or African American, 6% Hispanic or Latino, 1.6% American Indian or Alaska Native, .2% Asian, and .1% Native Hawaiian or Other Pacific Islander.

### **Procedure**

The sample was derived from the Kansas Results Oriented Management System (ROM), which is a web-based performance information system that includes data on youth demographics, clinical outcomes, and program outcomes. This study includes data collected between January 2010 and December 2011. Youth, parents, and workers completed The Ohio Youth Problems, Functioning, and Satisfaction Scales (Ogles, Melendez, Davis, & Lunnen, 2000) at admission and discharge. Additionally, the workers collected discharge data on treatment plan completion and placement at discharge.

### **Variables and Measures**

The children and youth's age, gender, and race/ethnicity were collected by the staff members at the psychiatric residential treatment facilities. The length of stay represented the overall length of stay of youth in a psychiatric residential treatment facility throughout the study period. Treatment plan completion was assessed by documenting whether treatment goals were met/achieved and youth discharged successfully from PRTF (coded 1) or treatment goals were not met/achieved (coded 0). Placement at discharge was measured on a 9 point scale. The

placements included: (1) Home, (2) Foster Home, (3) Youth Residential Center, (4) Drug or Alcohol Treatment Center, (5) Juvenile Detention Center, (6) Juvenile Correctional Facility, (7) PRTF, (8) Psychiatric Hospital, and (9) Other.

### **Clinical Measures**

The Ohio Youth Problems, Functioning, and Satisfaction Scales (Ogles, et al., 2000) were used as clinical measures to assess aspects of the treatment process and to evaluate clinical improvement from admission to discharge.

**Youth hopefulness.** Youth rated their hopefulness at admission and discharge using the Youth Hopefulness Scale of the Ohio Youth Problems, Functioning, and Satisfaction Scales (Ogles et al., 2000). The Youth Hopefulness Scale consists of four questions and measures the level of hopefulness and well-being of the youth. The questions include: (1) Overall, how satisfied are you with your life right now? (2) How energetic and healthy do you feel right now? (3) How much stress and pressure is in your life right now? (4) How optimistic are you about the future? Each question is answered according to a 6-point Likert scale, with specific scale items varying to fit the questions. A lower total score on the scale indicates a higher level of hope/well-being. Total youth hopefulness scores were calculated at admission and discharge by summing the 4 items on the scale. The Youth Hopefulness Scale has demonstrated satisfactory internal consistency, Cronbach's  $\alpha = .87$  (Ogles, Melendez, Davis, & Lunnen, 2001).

**Parent hopefulness.** Parents rated their hopefulness at admission and discharge using the Parent Hopefulness Scale of the Ohio Youth Problems, Functioning, and Satisfaction Scales (Ogles et al., 2000). The Parent Hopefulness Scale consists of four questions and measures the level of hopefulness and well-being of the parent. The questions include: (1) Overall, how satisfied are you with your relationship with your child right now? (2) How capable of dealing

with your child's problems do you feel right now? (3) How much stress or pressure is in your life right now? (4) How optimistic are you about your child's future right now? Each question is answered according to a 6-point Likert scale, with specific scale items varying to fit the questions. A lower total score on the scale indicates a higher level of hope/well-being. Total parent hopefulness scores were calculated at admission and discharge by summing the 4 items on the scale. The Parent Hopefulness Scale has demonstrated satisfactory internal consistency, Cronbach's  $\alpha = .75$  (Ogles et al., 2001).

**Youth satisfaction.** Youth rated their satisfaction mental health services at admission and discharge using the Youth Satisfaction Scale of the Ohio Youth Problems, Functioning, and Satisfaction Scales (Ogles et al., 2000). The Youth Satisfaction Scale consists of four questions and measures the level of satisfaction with mental health services and level of inclusion in the treatment process. The questions include: (1) How satisfied are you with the mental health services you have received so far? (2) How much are you included in deciding your treatment? (3) Mental health workers involved in my case listen to me and know what I want. (4) I have a lot to say about what happens in my treatment. Each question is answered according to a 6-point Likert scale, with specific scale items varying to fit the questions. A lower total score on the scale indicates a higher level of satisfaction/treatment inclusion. Total youth satisfaction scores were calculated at admission and discharge by summing the 4 items on the scale. The Youth Satisfaction Scale has demonstrated satisfactory internal consistency, Cronbach's  $\alpha = .82$  (Ogles et al., 2001).

**Parent satisfaction.** Parents rated their satisfaction with the mental health services their child has received at admission and discharge using the Parent Satisfaction Scale of the Ohio Youth Problems, Functioning, and Satisfaction Scales (Ogles et al., 2000). The Parent

Satisfaction Scale consists of 4 questions that measure the level of satisfaction with the mental health services their child has received and level of inclusion in the treatment process. The questions include: (1) How satisfied are you with the mental health services your child has received so far? (2) To what degree have you been included in the treatment planning process for your child? (3) Mental health workers involved in my case listen to and value my ideas about treatment planning for my child. (4) To what extent does your child's treatment plan include your ideas about your child's treatment needs? Each question is answered according to a 6-point Likert scale, with specific scale items varying to fit the questions. A lower total score on the scale indicates a higher level of satisfaction/treatment inclusion. Total parent satisfaction scores were calculated at admission and discharge by summing the 4 items on the scale. The Parent Satisfaction Scale has demonstrated satisfactory internal consistency, Cronbach's alpha = .72 (Ogles et al., 2001).

**Youth problem severity.** The youth, parent, and worker rated the child's level of problem severity at admission and discharge using the Problem Severity Scale of the Ohio Youth Problems, Functioning, and Satisfaction Scales (Ogles et al., 2000). The Problem Severity Scale consists of 20 items, covering a range of youth problems. Each question is answered according to a 6-point Likert scale, with specific scale items ranging from 0 (Not at all) to 5 (All of the Time). A higher total score on the scale indicates a higher level of youth problem severity. Total problem severity scores were calculated at admission and discharge by summing the 20 items on the scale. The Problem Severity Scale has demonstrated excellent internal consistency, Cronbach's alpha = .95, .93, .92 for the parent, youth, and worker respectively (Ogles et al., 2001).

**Youth functioning.** The youth, parent, and worker rated the child's level of functioning at admission and discharge using the Functioning Scale of the Ohio Youth Problems, Functioning, and Satisfaction Scales (Ogles et al., 2000). The Functioning Scale consists of 20 items which assesses functioning and impairment in several domains including family, friends, school, work, and recreational activities. Each question is answered according to a 5-point Likert Scale, with specific scale items ranging from 0 (Extreme Troubles) to 4 (Doing Very Well). A higher total score on the scale indicates a higher level of youth functioning. Total functioning scores were calculated at admission and discharge by summing the 20 items on the scale. The Functioning Scale has demonstrated excellent internal consistency, Cronbach's alpha = .93, .91, .94 for the parent, youth, and worker respectively (Ogles et al., 2001).

### DATA ANALYSIS

The data analysis included descriptive statistics and paired samples *t* tests. For the treatment process scales (Hopefulness and Satisfaction) and the clinical scales (Problem Severity and Functioning), mean scores were presented and paired samples *t* tests were used to assess change from admission to discharge. Multiple regression was used to examine the relationships between certain predictive variables and clinical outcomes. For the multiple regression analyses change scores were calculated for each of the Ohio Scales (Hopefulness, Satisfaction, Problem Severity, and Functioning) by subtracting the score at discharge from the score at admission. Additionally, the variables gender (0 = female, 1 = male) and ethnicity (0 = other, 1=white) were dummy coded for inclusion in the regression analyses. Subsequent analysis in the form of a repeated measures MANOVA was conducted to determine if there was variation on the clinical outcomes (Problem Severity & Functioning) across programs.



## RESULTS

### Sample Characteristics

The mean age for the total sample was 14.18 years, with youth ranging in age from 6 to 21 years of age. Among the age groups, over half of the cases were between 11 and 15 years old (52.5%), while 30.7% were between 16 and 17 years old. Only 11.0% of the cases were between 6 and 10 years, while 5.9% of the cases were 18 years or older. A majority of the cases were male (61.8%) and white (73.5%). Most of the youth (46.1%) stayed at the facility for less than 90 days, while 27.8% of the youth stayed in the facilities for 91-150 days and 13.8% stayed between 151 and 210 days. Only 12.2% of youth stayed at the facility longer than 211 days. The average length of stay was 132 days. A majority of the children/youth successfully completed treatment (71.2%), with a majority (80.3%) being placed at a community based placement such as home, foster home, or youth residential center upon discharge.

### Paired-Samples *t*-tests

The Ohio Youth Problems, Functioning, Hopefulness and Satisfaction Scales were used to assess hopefulness, satisfaction with services, problem severity, and functioning at admission and discharge. The overall mean scores for the scales are presented in Table 2.0. Paired samples *t*-tests were used to determine if there was significant improvement on these outcomes from admission to discharge. The results of these tests are presented in Table 3.0. The results indicated that there was statistically significant improvement on all outcomes from admission to discharge  $p < .001$ . The results indicated that both the youth and parent became more hopeful from admission to discharge. Further, both the youth and parent reported significant improvement in their level of satisfaction with services from admission to discharge. For the clinical outcomes,

the youth, parent, and worker all perceived significant improvement in the youths' problem severity and functioning scores from admission to discharge

### **Multiple Linear Regression**

Multiple linear regression findings suggested that an increase in hopefulness was the strongest predictor of improvement on the problem severity and functioning scales. For youth, an increase in hopefulness explained 18.1% of the variance in their problem severity score (Table 4.0) and 19.4% of the variance in their functioning score (Table 4.1), while controlling for the youths' age, gender, ethnicity, and length of stay. These findings suggest that youth who reported an increase in hopefulness from admission to discharge were more likely to perceive more improvement in their problem severity and functioning scores from admission to discharge. The effect of hopefulness was also strong for parents. In the parent model, hopefulness explained 26.2% of the variance in their rating of their child's problem severity (Table 5.0) and 37.8% of the variance in their rating of their child's functioning (Table 5.1), while controlling for the youths' age, gender, ethnicity, and length of stay. These findings suggested that parents who reported an increase in hopefulness from admission to discharge were more likely to perceive more improvement in their child's problem severity and functioning scores from admission to discharge.

The findings suggested that an increase in total satisfaction was also a significant predictor of improvement on the problem severity and functioning scales. For youth, an increase in total satisfaction explained 5.7% of the variance in their problem severity score (Table 4.0) and 12.9% of the variance in their functioning score (Table 4.1), while controlling for the youths' age, gender, ethnicity, and length of stay. These findings suggested that youth who reported an increase in satisfaction from admission to discharge were more likely to perceive more

improvement in their problem severity and functioning scores from admission to discharge. The effect of satisfaction was not as strong for parents. For parents, an increase in total satisfaction explained 11.1% of the variance in their rating of their child's functioning (Table 5.1) but did not explain a significant proportion of the variance in their rating of their child's problem severity, while controlling for the youth's age, gender, ethnicity, and length of stay. These findings suggest that parents who reported an increase in total satisfaction from admission to discharge were more likely to perceive more improvement in their child's functioning score from admission to discharge.

In addition to the influence of hopefulness and satisfaction on treatment outcomes more broadly, specific hopefulness and satisfaction items were examined given their perceived contribution to positive treatment outcomes. These items relate to parent and youth's involvement in treatment, voice in treatment, and perceived satisfaction with mental health worker(s). While most findings were significant, they were weaker predictors when compared to hopefulness and satisfaction broadly. For youth, an increase in treatment involvement explained 3.4% of the variance in their problem severity score (Table 4.0), while an increase in satisfaction with mental health staff and voice in treatment explained 3.3% and 3.5% of the variance, while controlling for the youth's age, gender, ethnicity, and length of stay. For functioning (Table 4.1), an increase in treatment involvement explained 6.9% of the variance in their functioning score, while an increase in satisfaction with mental health staff and voice in treatment explained 6.0 % and 8.4% of the variance, while controlling for the youth's age, gender, ethnicity, and length of stay. These findings suggest that youth who see an increase in treatment involvement, satisfaction with mental health staff, and voice in treatment are more likely to perceive more improvement in their problem severity and functioning scores from admission to discharge. For

parents, an increase in treatment involvement, satisfaction with mental health staff, and voice in treatment did not significantly predict an improvement in their rating of their child's problem severity (Table 5.0). However, an increase in treatment involvement and satisfaction with mental health staff explained 10.8% and 10.6% of the variance in their rating of their child's functioning, while an increase in voice in treatment explained 9.9% of the variance, while controlling for the youth's age, gender, ethnicity, and length of stay (Table 5.1). These findings suggest that parents who reported an increase in treatment involvement, satisfaction with mental health staff, and voice in treatment were more likely to perceive more improvement in their child's functioning from admission to discharge.

### **Repeated Measures MANOVA**

In view of results indicating improvements in both problem severity and functioning from the time of admission to discharge, the research team were interested in further establishing whether these findings differed by facility. Subsequent analysis in the form of Repeated Measures MANOVA were conducted to test the PRTF effect on the two clinical outcomes, problem severity and functioning.

Individual repeated measure MANOVA was conducted for each individual rater (i.e. youth, parent, and worker) on the two clinical outcomes. For the youth rating, the results showed that there were differences between PRTFS on the two clinical outcomes over time  $F(32, 1058) = 1.54, p < .001$ . Univariate tests also indicated that there was a PRTF effect on the two clinical outcomes,  $F(16, 530) = 2.10, p = .007, \eta^2 = .06$  for problem severity and  $F(16, 530) = 1.68, p = .047, \eta^2 = .05$  for functioning. For the parent rating, the results showed that there were differences between PRTFs on the two clinical outcomes over time  $F(32, 702) = 1.74, p = .008$ . Univariate tests also indicated that there was a PRTF effect on the two clinical outcomes  $F(16,$

352) = 1.97,  $p = .015$ ,  $\eta^2 = .08$  for problem severity and  $F(16, 352) = 2.48$ ,  $p = .001$ ,  $\eta^2 = .10$  for functioning. For the worker rating, the results showed that there were differences between PRTFs on the two clinical outcomes over time  $F(28, 1118) = 7.58$ ,  $p < .001$ . Univariate tests also indicated that there was a PRTF effect on the two clinical outcomes  $F(14, 560) = 13.37$ ,  $p < .001$ ,  $\eta^2 = .25$  for problem severity and  $F(14, 560) = 8.85$ ,  $p < .001$ ,  $\eta^2 = .18$  for functioning.

The additional results support previous research (Helgersen, Martinovich, Durkin, & Lyons, 2007; Lyons, et al., 2001) that improvements in youth do vary by treatment facility with variation across programs existing on the two clinical outcomes, problem severity and functioning.

## DISCUSSION

In 2007, the State of Kansas reorganized purchase of service contracts creating more distinct categories of service provision for children with mental health needs. One of the distinctions was for intensive residential services (psychiatric residential treatment facilities-PRTF). To complement this development, efforts were invested in designing a system that is targeted towards the needs of all the providers of psychiatric residential treatment centers in Kansas. The end product was an information system that addressed the needs of multiple facilities and provided a unified set of program performance indicators (Kapp, Hahn, & Rand 2011).

Using the information from this system we were able to examine some key programming questions. Youth were achieving positive outcome while in the facilities. These findings conflict with popular notions that youth in these facilities are often warehoused and do not make productive improvements. The youth in these facilities, left the programs having made legitimate

positive changes in both the severity of their problems and their functioning. This finding raises a question about the degree to which these youth can maintain and generalize these gains in the subsequent community-based settings. That data is currently not available.

As we examined these gains across facilities, we did find some differences. Additional research needs to investigate the source of these differences. The differences may be due to the variation in therapeutic models and/or the implementation of those services. Additionally, the differences may be more related to the client populations at various facilities, while our preliminary examination did not highlight specific differences more intensive examination is warranted.

Another specific issue requiring further investigation is the relationship between hopefulness and clinical improvements. Youth, and their parents, who reported to have more hope were more likely to experience the positive changes. This finding begins to identify the value of a positive life attitude as a target for therapeutic intervention with this population of youth. However, additional research is needed to more completely understand this relationship.

Another aspect of this finding is the role of parents in the positive changes made by these youth. While practitioners agree that these youth often continue their relationships with their parents in community settings, the role of parents in these settings requires more development and further research.

This entire project attempts to capture the intent forwarded in the work of Epstein and Grasso (1993). Practice-based decisions can be enlightened by information systems that are designed and operated with the needs of practitioners in mind.

The research supports other discussions that point to the value of consumer attitude as an important component of client change. These data align with the work of others that have

highlighted the value of positive beliefs as a personal resource in therapeutic processes (Walter & Petr, 2008 and Duncan, Miller & Sparks, 2004). These findings should encourage practitioners to consider how this information can be meaningfully integrated and emphasized in methods of treatment.

Additionally, the Epstein and Grasso (1993) frame identifies multiple sets of practitioners. The previous questions in the discussion section have followed more closely with clinical practice but these data also represents policy and programmatic issues. How facility variation contributes to differences in clinical improvement and how facilities promote positive attitudes in both the youth and the parent(s) are noteworthy for program-level discussion.

This study was not without limitations. Practice trends suggest that child mental health services are increasingly responding to younger children. This study involved primarily youth aged 11 and over (89%) and youth self-categorized as white (75%). As such, future studies should be more attentive to outcome achievement in the distinct demographic subgroups of youth receiving PRTF services. Secondly, this study examined raw change scores from admission to discharge rather than standardized scores. While this approach to change measurement may reflect true change, there are problems inherent with this approach that are well documented (Cronbach & Furby, 1970).

This work illustrates the value of embedding these types of information systems into agency evaluation. System implementation requires ongoing efforts to ensure the system continues to maintain good quality data that is used to inform practice. This research supports that youth in these facilities can make clinical improvements and this type of service may have a productive place in the continuum of care for children with mental health needs. Through the

use of system data, both practitioners and researchers can begin to examine more complex service questions to consider how various factors contribute to positive treatment outcomes.



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Table 1.0  
*Sample Characteristics*

Variables	N	%
Age		
6-10 years	138	11.0%
11-15 years	659	52.5%
16-17 years	385	30.7%
18+ years	74	5.9%
Mean (SD)	14.18 (2.68)	
Gender		
Male	778	61.8%
Female	480	38.2%
Race/Ethnicity		
White	925	73.5%
Other	352	26.5%
Length of Stay		
90 days or less	580	46.1%
91-150 days	350	27.8%
151-210 days	174	13.8%
210+ days	154	12.2%
Mean (SD)	132.3 (88.5)	
Treatment Plan Completion		
Treatment goals met/achieved	783	71.2%
Treatment goals not met/achieved	317	28.8%
Placement at Discharge		
Home	461	55.8
Foster Home	154	18.6
Youth Residential Center	49	5.9
Juvenile Detention Center	31	3.8
Juvenile Correctional Facility	4	.5
PRTF	45	5.4
Psychiatric Hospital	32	3.9
Other	50	6.1

Table 2.0

*Treatment Process & Clinical Outcomes*

Outcomes	Admission		Discharge	
	N	Mean (SD)	N	Mean (SD)
Treatment Process				
Youth Hopefulness	673	11.17 (4.24)	515	7.88 (3.67)
Parent Hopefulness	566	15.99 (4.66)	409	9.50 (3.81)
Youth Satisfaction	659	11.41 (5.32)	511	7.77 (4.06)
Parent Satisfaction	568	9.38 (4.66)	409	6.34 (3.23)
Clinical Outcomes				
Youth Problem Severity	879	28.48 (17.80)	661	16.10 (13.30)
Parent Problem Severity	761	42.90 (17.44)	507	16.50 (14.10)
Worker Problem Severity	776	35.23 (16.82)	693	20.16 (14.34)
Youth Functioning	833	55.04 (14.46)	646	64.92 (11.94)
Parent Functioning	745	29.67 (14.80)	481	51.95 (16.85)
Worker Functioning	763	36.94 (13.60)	685	49.73(15.21)

Table 3.0

*Paired Samples t-test*

Rater	Scale	Admission		Discharge		t
		N	Mean (SD)	N	Mean (SD)	
Youth	Hopefulness	425	11.43 (4.20)	425	7.88 (3.62)	15.40***
	Satisfaction	414	11.98 (5.31)	414	7.73 (4.13)	15.26***
	Problem Severity	592	28.85 (18.08)	592	15.80 (13.23)	16.84***
	Functioning	562	54.13 (14.55)	562	65.15 (11.95)	-17.13***
Parent	Hopefulness	294	15.94 (4.6)	294	9.34 (3.59)	22.76***
	Satisfaction	293	9.37 (4.61)	293	6.39 (3.29)	9.85***
	Problem Severity	406	42.84 (17.44)	406	16.31 (13.54)	26.30***
	Functioning	381	28.88 (14.18)	381	51.69 (16.54)	-23.30***
Worker	Problem Severity	605	36.13 (16.83)	605	20.12 (14.20)	19.64***
	Functioning	589	36.13 (13.16)	589	49.73 (15.23)	-18.63***

\*\*\*  $p < .001$

Table 4.0

*Youth Change in Perception of Problem Severity*

Variable	<i>b</i> (Seb)	$\beta$	T	Sig.
Model 1				
Youth Hopefulness	1.65(.18)	.42	9.30	.000
Male	-2.29(1.72)	-.06	-1.33	.184
White	3.52(2.02)	.08	1.75	.082
Length of Stay	-.02(.01)	-.06	-1.33	.184
Age	-.13(.37)	-.02	-.37	.718
Model 2				
Youth Satisfaction	.74(.16)	.22	4.58	.000
Male	-2.57(1.86)	-.07	-1.38	.167
White	2.69(2.16)	.06	1.25	.213
Length of Stay	-.10(.01)	-.03	-.68	.500
Age	.05(.40)	.01	.13	.893
Model 3				
Youth Treatment Involvement	1.63(.49)	.16	3.36	.001
Male	-2.53(1.87)	-.07	-1.35	.176
White	2.48(2.18)	.06	1.14	.254
Length of Stay	-.01(.01)	-.04	-.76	.451
Age	.09(.40)	.01	.23	.818
Model 4				
Youth Satisfaction with Worker	1.51(.49)	.15	3.09	.002
Male	-2.22(1.85)	-.06	-1.20	.228
White	4.03(2.16)	.09	1.86	.063
Length of Stay	-.01(.01)	-.03	-.69	.494
Age	.14(.39)	.02	.37	.715
Model 5				
Youth Voice in Treatment	1.53(.44)	.17	3.46	.001
Male	-2.17(1.88)	-.06	-1.15	.249
White	2.02(2.20)	.045	.92	.358
Length of Stay	-.01(.01)	-.02	-.46	.646
Age	.06(.41)	.01	.15	.883

*Model 1:  $R^2 = .181$  ( $p < .001$ ), Model 2:  $R^2 = .057$  ( $p < .001$ ), Model 3:  $R^2 = .034$  ( $p = .013$ ), Model 4:  $R^2 = .033$  ( $p = .015$ ), Model 5:  $R^2 = .035$  ( $p = .014$ )*

Table 4.1

*Youth Change in Perception of Functioning*

Variable	<i>b</i> (Seb)	$\beta$	T	Sig.
Model 1				
Youth Hopefulness	-1.35(.14)	-.43	-9.55	.000
Male	-.77(1.37)	-.03	-.56	.576
White	-3.24(1.60)	-.09	-2.02	.044
Length of Stay	.01(.01)	.06	1.43	.154
Age	.52(.30)	.08	1.74	.082
Model 2				
Youth Satisfaction	-.91(.12)	-.35	-7.30	.000
Male	.28(1.44)	.01	.19	.849
White	-2.18(1.67)	-.06	-1.31	.192
Length of Stay	.01(.01)	.06	1.28	.200
Age	.34(.32)	.05	1.08	.281
Model 3				
Youth Treatment Involvement	-1.88(.37)	-.24	-5.03	.000
Male	-.01(1.45)	-.00	-.01	.994
White	-1.98(1.69)	-.06	-1.17	.244
Length of Stay	.01(.01)	.06	1.15	.251
Age	.30(.31)	.05	.95	.343
Model 4				
Youth Satisfaction with Worker	-1.74(.39)	-.22	-4.51	.000
Male	-.39 (1.46)	-.01	-.27	.788
White	-2.99(1.70)	-.09	-1.76	.080
Length of Stay	.01(.01)	.06	1.17	.242
Age	.39(.31)	.06	1.25	.211
Model 5				
Youth Voice in Treatment	-1.92(.34)	-.27	-5.60	.000
Male	-.43(1.46)	-.01	-.29	.771
White	-1.90(1.71)	-.05	-1.11	.267
Length of Stay	.01(.01)	.05	1.03	.304
Age	.38(.32)	.06	1.20	.230



*Model 1:  $R^2 = .194$  ( $p < .001$ ), Model 2:  $R^2 = .129$  ( $p < .001$ ), Model 3:  $R^2 = .069$  ( $p < .001$ ), Model 4:  $R^2 = .060$  ( $p < .001$ ), Model 5:  $R^2 = .084$  ( $p < .001$ )*

Table 5.0

*Parent Change in Perception of Problem Severity*

Variable	<i>b</i> (Seb)	$\beta$	T	Sig.
Model 1				
Parent Hopefulness	1.94(.21)	.50	9.35	.000
Male	-1.88(2.10)	-.05	-.90	.371
White	1.21(2.65)	.02	.46	.648
Length of Stay	-.01(.01)	-.02	-.35	.726
Age	.51(.38)	.07	1.35	.17

*Model 1:  $R^2 = .262$  ( $p < .001$ ), Model 2:  $R^2 = .028$  ( $p = .169$ ), Model 3:  $R^2 = .027$  ( $p = .180$ ), Model 4:  $R^2 = .029$  ( $p = .140$ ), Model 5:  $R^2 = .031$  ( $p = .107$ )*

Table 5.1

*Parent Change in Perception of Functioning*

Variable	<i>b</i> (Seb)	$\beta$	T	Sig.
Model 1				
Parent Hopefulness	-2.10(.19)	-.56	-11.27	.000
Male	.90(1.88)	.02	.48	.632
White	-3.28(2.38)	-.07	-1.38	.169
Length of Stay	.03(.01)	.12	2.40	.017
Age	-1.09(.34)	-.16	-3.22	.001
Model 2				
Parent Satisfaction	-.52(.20)	-.15	-2.64	.009
Male	-1.07(2.12)	-.03	-.50	.615
White	-8.89(2.62)	-.20	-3.39	.001
Length of Stay	.03(.02)	.13	2.16	.032
Age	-1.05(.40)	-.15	-2.64	.009
Model 3				
Parent Treatment Involvement	-1.41(.63)	-.13	-2.25	.025
Male	-.73(2.12)	-.02	-.34	.732
White	-8.90(2.63)	-.20	-3.38	.001
Length of Stay	.03(.01)	.14	2.36	.019
Age	-1.09(.40)	-.16	-2.73	.007

## Clinical Gains for Youth in PRTF

### Model 4

Parent Satisfaction with Worker	-1.27(.60)	-.12	-2.11	.036
Male	-1.29(2.13)	-.04	-.60	.547
White	-8.96(2.66)	-.19	-3.37	.001
Length of Stay	.03(.02)	.12	2.06	.040
Age	-1.24(.40)	-.18	-3.12	.002

### Model 5

Parent Voice in Treatment	-.78(.69)	-.06	-1.12	.263
Male	-.86(2.14)	-.02	-.40	.687
White	-8.89(2.66)	-.19	-3.34	.001
Length of Stay	.03(.02)	.12	2.07	.040
Age	-1.33(.40)	-.19	-3.36	.001

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*Model 1:  $R^2 = .378$  ( $p < .001$ ), Model 2:  $R^2 = .111$  ( $p < .001$ ), Model 3:  $R^2 = .108$  ( $p < .001$ ), Model 4:  $R^2 = .106$  ( $p < .001$ ), Model 5:  $R^2 = .099$  ( $p < .001$ )*